

# Outcomes in Behavioral RCTs: Linking Hypotheses to Outcomes and Assessment Measures

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# Principle I

- Study hypotheses should be framed so that they translate to measurable variables
  - Example:
    - Pts who receive Cognitive Adaptation Training will report fewer psychotic, depressive and negative symptoms, higher levels of adaptive functioning and lower rates of relapse

# Principle II

- Variables should be operationally defined by assessment measures
  - Example:
    - psychotic, depressive and negative symptoms
      - Brief Psychiatric Rating Scale
    - adaptive functioning
      - Multnomah Community Adjustment Scale

# Principle III

- Assessments should be defined in advance and linked to domains of outcome in the study protocol and operations manual
  - example
    - psychosis                      BPRS items
    - suspiciousness
    - conceptual disorganization
    - unusual thought content

# Principle IV

- Timing of assessments should capture the time course of anticipated change
  - Example - CARS clinical trial
    - psychosis symptoms measured weekly for first five weeks, then monthly
    - cognitive functions measured at baseline and six months

# Principle V

- Assessment instruments should be “attractive” to reviewers and assessors
  - Established , with a history of use in the field
  - Document reliability
    - Published inter-rater
    - Study inter-rater
  - Document validity
    - Face
    - Discriminant

# Reliability - consistency or precision of discrimination

- internal consistency of items within a measure
- test-retest - agreement over time
- inter-rater - agreement among assessors
- internal consistency and test-retest reliability are characterize an instrument
- inter-rater reliability characterizes a trial

# Validity - degree to which a measure reflects “truth” or the real thing

- Face - does the measure tap the domain?
- Content - does the measure span the domain?
- Criterion - relationship to a “gold” standard
- Construct - discriminant, sensitivity to change



# Criterion Validity

## the gold standard

- Sensitivity - detection of true cases
- Specificity - identification of non-cases as cases
- these measures are in balance
  - high sensitivity low threshold will detect all cases, but will include many non-cases
  - high specificity high threshold will miss cases, but won't include non cases

# LEAD Stand-in for a Gold Standard in Psychiatric Diagnosis

- Longitudinal observation by
- Experts using
- All available
- Data
- RL Spitzer. Psychiatric diagnosis: are clinicians still necessary? Compr Psychiatry 24:399-411, 1983

# Criterion Validity for Ratings of Adherence to Medication Regimens

- Plasma concentrations of medication
- MEMS - Medication Electronic Monitoring System
- LEAD model using clinician judgments, pill counts, patient report

# Construct Validity

- Sensitivity to change
- Discriminant - ability to discriminate groups
- In choosing outcome measures for RCTS of behavioral interventions these are critical factors
- Has this measure previously discriminated between behavioral interventions in this population?

# Primary Outcome Measure for an RCT of a Behavioral Intervention

- Clearly tied to the major study hypothesis
- Excellent face validity
- Good published reliability
- Easy to train raters to reliability
- Sensitive to change
- Prior success in discriminating treatments
- Can be administered on multiple occasions
- Acceptable to trial participants

# Secondary Outcome Measures for an RCT of a Behavioral Intervention

- Some of the characteristics of the primary measure
  - AND
- Tailored to the intervention
- Tailored to the patient population
- Tied to secondary hypotheses
- Generate hypotheses for future study

# Strategy for Choosing an Outcome Measure Package

- Include assessments that are linked to prior RCTs in the population
- Include assessments that tap the hypothesized effects of the intervention
- Measure the putative mechanism of action of the intervention - process in psychotherapy
- Consider the time-frame of hypothesized change in determining assessment intervals

# Sources of Outcome Information

- Self-report by the patient/client
- Ratings by clinician or “interventionist”
- Ratings by independent, masked assessors
- External measures
  - hospitalization
  - arrests



# Assessment Challenges for RCTs of Behavioral Interventions

- The intervention itself requires measurement
- Outcomes are rarely measured unambiguously
- The target populations may be defined by medication effects
- The established outcome standard in the field may be medication biased

# A Great Reference Volume

- Handbook of Psychiatric Measures
- edited by the Task Force for the Handbook
  - published by American Psychiatric Association
    - 2000